

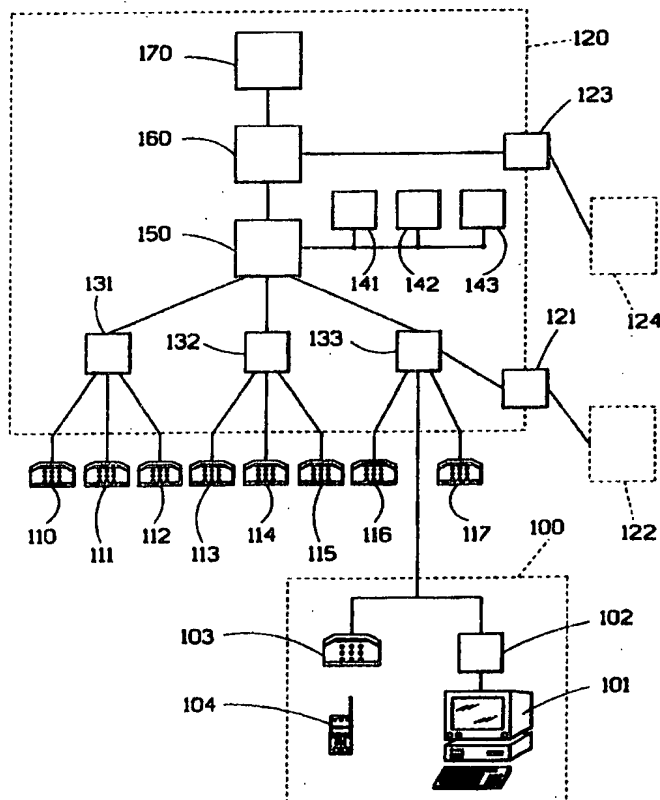


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(54) Title: METHOD AND DEVICE FOR INTERACTION**(57) Abstract**

A method and device for automatic interaction, for example a market survey, with a number of subscribers (110-117) in a telecommunication network (120), such as a public switched telephone network (PSTN). A customer (100) requests an automated interaction, such as an advertisement or a market survey, with a group of subscribers, a target group, of the telecommunication network. The subscribers of the target group are selected by predetermined criteria, such as age and/or area of residence. The subscribers of the target group are called and automatically interacted with by the telecommunication network. A record is kept by the network of which subscribers could be reached within certain predetermined constraints, which of the subscribers that could be reached that actually completed the interaction and which did not. The results of the automated transactions are reported to the customer (100).



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Method and device for interaction

FIELD OF THE INVENTION

5 The present invention relates generally to a method and device for, for example, a market survey, an opinion poll, or communication with a number of subscribers in a telecommunication network, such as a public switched telephone network (PSTN).

10 BACKGROUND TO THE INVENTION

15 Newspapers, news agencies, radio and television newsrooms often have a desire to perform opinion polls quickly, for example, after a controversial statement has been made by a leading politician. To be able to present the results of such opinion polls to the public, the method of performing an opinion poll has to be such that it provides some basic statistical certainty. To be able to provide some basic statistical certainty, several thousand people, chosen in such a manner as to be representative of the population as a whole, have to be asked of their opinion. Such a task is impossible to accomplish by a reporter, or even a whole news agency, in an acceptable period of time. Therefore, special companies have emerged, which are only occupied with opinion polls, market surveys, and the like. As the methods used to perform these polls are traditionally labour intensive, opinion polls are extremely expensive and are carried out infrequently.

25 There have been some attempts to provide systems which are designed to improve the above mentioned labour intensive

methods. Unfortunately these systems are extremely expensive and require the user to provide a large number of individual telephone lines. One such system can be found in WO 88/05239.

- 5 Advertisers constantly try to refine their methods of advertising to be able to only reach their intended target groups. One reason for this is that advertising is extremely expensive and mostly annoying for others than the intended consumer group for which the products/services
- 10 that are advertised are intended. Different methods have evolved for providing better targeting, so that the advertiser does not waste money on providing, for example, free diaper samples to families with no babies. Some of these systems that have evolved require expensive and
- 15 cumbersome equipment to distribute/broadcast the advertisements, and to reach the target groups they also require special receiver equipment for these advertisements in the homes of the intended target groups. Examples of such systems can be found in US 5,515,098 and WO 94/30000.
- 20 Another example of how advertisers try to reach new consumer groups is by providing free or subsidised telephone calls in exchange for letting advertisers interrupt the conversation at a certain interval. This can be found in, for example, US 5,448,625.

25 SUMMARY OF THE INVENTION

An object of the invention is to define a novel telecommunication network/system method and a novel telecommunication network/system, especially a public switched telephone network (PSTN).

Another object of the invention is to define a telecommunication network/system service.

5 Still another object of the invention is to define a method and a device which are able to deliver announcements/advertisements to a large number of subscribers of a telecommunication network/system, especially a public switched telephone network (PSTN), in a short amount of time completely automated.

10 A further object of the invention is to define a method and a device which are able to perform an opinion poll or a market survey on a large number of subscribers of a telecommunication network/system, especially a public switched telephone network (PSTN), in a short amount of time completely automated.

15 The above-mentioned objects are achieved in accordance with the invention by a method of providing an automatic interaction service in a telecommunication network and by a telecommunication network where an automatic interaction service is provided. An interaction can take many
20 different forms including, for example, playing messages to a, for example, listening subscriber, and prompting/-questioning a subscriber for a response. The telecommunication network can suitably be such a telecommunication network where the majority of the subscribers have a
25 telephone connected to the telecommunication network; such networks are sometimes called public switched telephone networks (PSTN). The subscribers of the telecommunication networks are assumed to have some kind of communication device with which a subscriber can communicate with the
30 telecommunication network. Such a communication device is preferably a telephone or a mobile telephone but can be other devices with which the subscriber can communicate with the telecommunication network.

A customer requests an automated interaction, such as an advertisement in the form of one or more messages, or a market survey, with a group of subscribers, a target group, of the telecommunication network. The subscribers of the target group are preferably selected by predetermined criteria, such as age, habits (such as buying habits), and/or area of residence. The subscribers of the target group are called and automatically interacted with by the telecommunication network. Record is kept by the network of which subscribers could be reached within certain predetermined constraints, which of the subscribers that could be reached actually completed the interaction and which did not. The results of the automated transactions are reported to the customer.

The aforementioned objects are also achieved according to the invention by a method of providing a telecommunication service providing an automatic interaction with a predetermined number of subscribers in the telecommunication network over the telecommunication network upon a customer request to the telecommunication network. The method comprises a number of steps. In a control node of the telecommunication network a list of subscribers with whom the automatic interaction is to be performed is determined in a first step. In a second step the subscribers on the determined list are called at one or more predetermined occasions by means of the control node directing a switching node of the telecommunication network to establish communication lines with the subscribers on the determined list. The communication lines are preferably established between the subscribers in question and the switching node. The communication lines are not established to the customer. In a third step each subscriber is interacted with upon establishment of a communication line by means of the switching node. In a fourth step it is determined if the interaction was

completed with each subscriber with which interaction was commenced. Finally, in a fifth step the results of the interactions with the subscribers on the determined list are reported to the customer.

5 The interaction is preferably an advertisement/announcement by means of providing a message to each subscriber, or a market survey by means of providing one or more questions to each subscriber to which questions responses from each subscriber are recorded.

10 One type of predetermined occasion when a subscriber can be called is when it is detected that the subscriber goes on-hook (i.e. when the subscriber just has ended a previous communication session which, for example, was initiated by the subscriber). There is thus no need to try to establish
15 contact with a busy line. Another type of predetermined occasion when a subscriber can be called is one of several time periods during a day.

The interaction is preferably immediately terminated and the subscriber is noted in the list as inaccessible, if a
20 machine generated output, such as a fax or a modem, is detected when a communication line has been established. The subscribers that are detected to have completed the interaction are preferably noted in the list of subscribers for a gratuity. The gratuity is preferably in the form of
25 free telephone time within the telecommunication network which is billed to the customer. The results and/or the number of detections of completed subscriber interaction are a basis for billing the customer.

30 The aforementioned objects are also achieved by a method of providing a telecommunication service providing an automatic interaction with a number of predetermined subscribers in the telecommunication network over the

telecommunication network upon a customer request to the telecommunication network. The method comprises a plurality of steps. In a first step the predetermined subscribers are called on one or more predetermined occasions by means of a control node in the telecommunication network directing a switching node of the telecommunication network to thereby establish communication with one or more of the predetermined subscribers. In a second step, upon establishment of communication by means of the switching node to one or more predetermined subscribers, the predetermined subscribers with whom communication has been established are interacted with from within the telecommunication network. In a third step it is determined with which predetermined subscribers with whom interaction was commenced, interaction was completed, thereby creating, together with the interactions, results of the interactions. And in a fourth and final step the results of the interactions with the predetermined subscribers are reported to the customer.

The aforementioned objects are also achieved by a method for providing an automatic interaction with a number of predetermined subscribers in a telecommunication network over the telecommunication network upon a customer request to the telecommunication network. The method comprises the following steps. In a first step the predetermined subscribers are called on one or more predetermined occasions by means of a control node in the telecommunication network directing a switching node of the telecommunication network to establish communication with one or more of the predetermined subscribers. In a second step upon establishment of communication by means of the switching node to one or more predetermined subscribers, the predetermined subscribers with whom communication has been established are interacted with from within the telecommunication network. In a third step results of the

interactions with the predetermined subscribers are created. And in a fourth and final step the results of the interactions with the predetermined subscribers are reported to the customer.

5 The aforementioned objects are achieved in accordance with the invention also by a telecommunication network for providing an automatic interaction with a predetermined number of subscribers in the telecommunication network over
10 the telecommunication network upon a customer request to the telecommunication network. The telecommunication network comprises a control node (preferably a service control point (SCP)), a switching node (preferably a service switching point (SSP)), interacting means, determining means, and reporting means. A list of
15 subscribers with whom the automatic interaction is to be performed is determined by means of the control node. The control node can make use of internal databases within the telecommunication network and/or the control node, and/or databases external to the telecommunication network. The
20 databases can, for example, be electronic telephone directories, credit card databases, and the like. The subscribers on the determined list are called on one or more predetermined occasions by the switching node under control of the control node directing the switching node to
25 establish communication lines with the subscribers on the determined list. The communication lines are preferably established between a subscriber in question and the switching node. The communication lines are not established to the customer or between subscribers. The
30 interacting means interact with each subscriber with whom a communication line has been established by the switching node. The determining means determine if the interaction was completed with each subscriber with whom interaction was commenced. The reporting means report to the customer

the results of the interactions with the subscribers on the determined list.

5 The interaction is preferably either an advertisement or a market survey. If the interaction is an advertisement, then it is preferable that the telecommunication network comprises means for providing a message to each subscriber. If the interaction is a market survey, then it is preferable that the telecommunication network comprises means for providing one or more questions to each subscriber and means for recording the responses to the questions from each subscriber.

15 The telecommunication network preferably comprises means for detecting when a subscriber goes on-hook in certain embodiments. In these embodiments the predetermined occasion when a subscriber is called is when the subscriber goes on hook. In other embodiments the predetermined occasion when a subscriber is called is one of several predetermined time periods during a day.

20 The telecommunication network can also comprise means to detect machine generated output. It is then preferable that, if a machine generated output is detected when a communication line has been established, the interaction is immediately terminated and the subscriber is noted in the list as inaccessible.

25 The subscribers that are detected to have completed the interaction are preferably noted in the list of subscribers for a gratuity. The gratuity can be in the form of free telephone time within the telecommunication network which is billed to the customer. The results and/or the number of detections of completed subscriber interaction are a basis for billing the customer.

The aforementioned objects are also achieved by a device for providing in a telecommunication network an automatic interaction with a number of predetermined subscribers in the telecommunication network over the telecommunication network upon a customer request to the device in the telecommunication network. The device comprises calling means, interacting means, determining means, and means for reporting. The calling means calls the predetermined subscribers on one or more predetermined occasions to establish communication between the device within the telecommunication network and one or more of the predetermined subscribers. The interacting means interacts with the one or more predetermined subscribers with whom communication has been established. The determining means determines which of the interactions which were commenced were completed, thereby, together with the interactions, creating results of the interactions. The means for reporting to the customer, reports the results of the interactions with the predetermined subscribers.

By providing a service of automated interaction to a predetermined number of subscribers in a telecommunication network, in the telecommunication network, a plurality of advantages over prior art systems are obtained. Since the service is provided within the telecommunication network then no additional subscriber lines are needed as is the case for external devices that are connected to the telecommunication network. If the telecommunication network is a so called intelligent network then very little or no new hardware is required to provide the service. The service is flexible and can satisfy demands of cost efficiency, flexibility in use, and ease of ordering/requesting the service. There are already procedures provided in telecommunication networks for billing customers and also there is an ease of providing gratuities in the form of free telephone time, for example,

within the telecommunication network to participating subscribers that is directly billed to the customers. The service can be ordered and set up and then at the decision of the customer, e.g. by a simple telephone call, be initiated, changed, or cancelled at a desired point in time. Access to the service for ordering/requesting the service, initiating the service, cancelling the service, and/or changing the service can be restricted to users with a PIN-code in all circumstances or only for certain cases. The customer might be able to introduce a PIN-code himself. PIN-codes are used for security reasons and can be submitted via telephone or computer access to the service. The automated interaction service can be used for announcements, advertisements, promotions, opinion polls and market surveys, to a selected group of subscribers. The service can also be used for simple announcements to a large group of people. For example, a gathering can be cancelled due to bad weather and with the help of the automated interaction service this can be communicated to a large number of people in a short period of time. The service can then report to the customer which subscribers did not respond, and the customer can then make a special effort to try to reach these few people.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will now be described in more detail for explanatory, and in no sense limiting, purposes, with reference to the following figures, in which

Fig. 1 shows a block diagram of one embodiment of a system according to the invention,

Fig. 2 shows a flow chart of a method according to the invention,

Fig. 3 shows a flow chart of how contact with a subscriber is established according to one method of the invention,

5 Fig. 4 shows a flow chart of how the interaction with a subscriber is accomplished according to one method of the invention,

Fig. 5 shows a flow chart of how the interaction with a subscriber is accomplished according to another method of the invention,

10 DETAILED DESCRIPTION

In order to clarify the system according to the invention, some examples of its use will now be described in connection with Figures 1 to 5.

15 Fig. 1 shows a block diagram of one embodiment of a system according to the invention. A telecommunication network 120, such as a public switched telecommunication network (PSTN), according to the invention, is shown with subscribers 110-117 attached to the network 120. A tele-
20 communication network 120 according to the invention preferably comprises a switching node 150, preferably a service switching point (SSP), controlled by a control node 160, preferably a service control point (SCP). The telecommunication network according to the invention can
25 also optionally comprise a data node 170, preferably a service data point (SDP). The switching node 150, under control of the control node 160, sets up communication lines, when necessary, between subscribers by means of one or more optional local exchanges (LE) 131-133. The telecommunication network 120 preferably also comprises a
30 device for recording and playing back announcements (AST-

DR) 141, a device for text to speech conversion (speech synthesis) 142 and, optionally, a device for speech recognition 143. These devices 141, 142, 143 can preferably be coupled to the switching node 150, as shown in fig. 1, or in some embodiments to the control node 160.

Another network 122, such as Internet, can be coupled to the network 120 by means of an interface 121. External databases 124, such as those of credit card companies, can, for example, be connected to the network 120 by means of an interface 123 as shown. The interface can also be connected to a local exchange 131-133, depending on the type and locality of the external database. A customer 100 who desires to automatically interact with a number of subscribers 110-117 of the telecommunication network 120 can, according to the invention, order this service from the telecommunication network 120. An interaction with a subscriber can take many different forms, such as playing a customer message or playing customer questions and recording subscriber responses. Both a one way communication between two parties where one actively delivers a message and one passively listens, and a two way communication between two parties where both are active, will be referred to as an interaction between these two parties.

The automatically performed interaction that the customer desires can, for example, be a market survey, an opinion poll, or different forms of advertisements. A customer 100 would normally not be interested in performing this automatic interaction with all of the subscribers 110-117 of the telecommunication network 120, but only with a preselected number of subscribers, a target group, chosen from all of the subscribers, the preselection being based upon one or several criteria. The criteria upon which a target group of subscribers is chosen can, for example, be

based upon age, sex, area of residence, habits such as buying habits, credit card or other card (for example library card) usage, family situation, social situation, income and/or car brand. The number of subscribers in a selected target group can be limited by one or several criteria only, or have a predetermined upper limit. - A target group can also be assembled from a predetermined number of randomly chosen subscribers. The telecommunication network 120 makes use of internal databases in the control node 160 and/or data node 170, and/or external databases 124 to assemble the target groups. It is preferably performed by the control node 160 or under the supervision/control of the control node 160. In some cases the customer might supply a list of subscribers that constitute the target group.

A customer 100 will place his order for the service, to the network 120, for example by means of a computer 101, by means of a mobile telephone 104, or by means of a telephone 103. As mentioned before, this can, for security reasons, in some embodiments be allowed first after a PIN-code has been issued by the customer. PIN-code access can be for selected access only, for all access to the service, and/or only used by request from the customer. The computer 101 can be connected to the network 120 directly to, for example, the data node 170, indirectly by means of an interface 102 to for example a local exchange 131 (as is shown in the figure) or indirectly by means of an external network 122 such as Internet.

The automatic interaction service can, for example, be divided into three basic types. The first type, standard, is predetermined and cannot be changed at all by the customer, the customer can only order and cancel it. Preferably, the network 120 according to the invention offers a number of standard automatic interactions that can

be ordered, such as opinion polls at perhaps different statistical confidence levels at different prices. The second type, semi-custom, will preferably allow the selection of a few standard target groups, for example the residence area of the customer, and possibly the possibility to record an announcement that is used in the interaction.

The third basic type, custom, can be programmed down to the last detail. The exact composition of the target group, perhaps the customer 100 provides his own list, the number of trials to establish communication that should be made, the gratuity, if any, that subscribers that complete the interaction should receive, how the results should be reported, and so on can be programmed by the customer.

The first two basic types, standard and semi-custom, can advantageously be ordered, initiated and/or cancelled by means of a telephone 103 or a mobile telephone 104. Naturally a computer 101 or a written order can be used as well. The natural choice of ordering the third basic type, custom, is to use a computer where all the choices can be selected and entered. As an example, the hours of the day when the interactions are to take place can be programmed, with perhaps certain hours being prohibited, such as, for example, between 23.00 hours and 07.00 hours, as not to disturb the subscribers at night. The use of a telephone 103 or a mobile telephone 104 is of course possible in this case but will normally restrict the customer to only being able to initiate and cancel the service, and, where appropriate, change an announcement (single or with only a few announcement automated interactions). The automatic interaction service can be available to customers that have made a previous agreement with the network 120 and/or to any subscriber 110-117 of the network 120.

When a customer 100 has made an order for an automatic interaction service, the control node 160 will direct the switching node 150 to establish contact with the subscribers in the target group. The establishment of contact with the subscribers in the target group will be performed in parallel, partly parallel or sequentially depending on the size of the target group, the capacity of the network, and/or the time requirements to complete the automatic interaction. Where appropriate, the control node 160 will direct the switching node 150 to make use of the device for recording and playing back announcements (AST-DR) 141, the device for text to speech conversion (speech synthesis) 142, and/or the device for speech recognition 143. If, upon contact with a subscriber, a machine generated output such as a modem or fax is detected then this subscriber is either deleted from the target group or noted as inaccessible. If contact is not possible within the predetermined number of trials the subscriber is either deleted from the target group or noted as inaccessible. Preferably the automatic interaction service does not attempt to establish contact with a subscriber after contact has been established once.

The network 120 will also keep track of with which subscribers of the target group actual contact was made within the time limits set and also which of these subscribers completed the interaction to the end. It might be important to keep track of which subscribers in the target group completed the transaction for the purpose of billing the customer and also for possible gratuities to the subscribers in question. Gratuities might be in the form of free communication time in the network 120 that is directly billed to the customer.

The different blocks of the network 120 should only be regarded as functional blocks and have nothing to do with

the physical appearance of the telecommunication network 120.

Fig. 2 shows a flow chart of a method according to the invention, which is preferably implemented in the control node 160 and/or switching node of the telecommunication network 120 according to figure 1. In a first step 210 of the method, a customer makes a request for an automated interaction service. In step 220 a list of subscribers in the telecommunication network that make up the target group is determined. The list can be provided by the customer or compiled from internal databases and/or external databases depending on the customer request. After the request by the customer has been made and the target group determined, the network commences to establish contact on predetermined occasions with the subscribers in the target group in step 230. Step 230 is only commenced if the customer has initiated the automated interaction service, which the customer could have done in step 210 or at a later point in time, by, for example, a simple telephone call. A customer can order the and set p the service in advance and then initiate the service at an appropriate time. Steps 230 to 280 are merely representations of what is done with each subscriber in the target group and, as disclosed above, this can be performed in parallel, partly parallel or sequentially as shown in the flow chart.

When contact with a subscriber of the target group has been established in step 230 then the interaction starts in step 240. When contact with the subscriber in question has ended then it is established in step 250 if the interaction was complete or if contact was broken prematurely by the subscriber in question. If the interaction was complete, then in step 260 the subscriber in question is marked in the list as having completed the transaction; this information could be used for providing the subscriber with

a gratuity. If the interaction was determined incomplete in step 250, then in a step 270 the subscriber is marked in the list as not having completed the interaction and/or the subscriber in question is deleted from the list and/or the subscriber is marked in a special stop list to, for example, prevent the subscriber from appearing in any target group in the (near) future.

A test step 280 establishes if there are any more subscribers in the target group that are still possible subjects for an automatic interaction and, if so, the procedure recommences at step 230. The target group might contain 50000 subscribers but the customer request is to only perform 4000 complete automatic interactions, the test step 280 will of course then count the number of successful interactions and stop at 4000. If there are no more interactions to be performed or the target group is empty, then in a step 290 a report to the customer is compiled and delivered to the customer in a manner consistent with the customer's request. The report can, for example, contain the number of successful interactions, the result of a market survey or an opinion poll, the total cost of the automatic interaction service and/or a list of subscribers to whom a gratuity should be sent. The report can be provided to the customer in a format requested by the customer such as by fax, by synthetic speech by telephone, by mail, by e-mail and/or by transfer to a computer.

Fig. 3 shows a flow chart of how contact with a subscriber is established according to one method of the invention. The flow chart of figure 3 is one possible expansion of step 230 in figure 2. At a step 331 communication with a subscriber, who is still to be contacted and who belongs to the target group, is attempted at a predetermined occasion. A predetermined occasion can be one of several times a day when an attempt should be made. A predetermined occasion

can also be when the subscriber goes on-hook, i.e. when the subscriber has just finished a telephone conversation. This can be detected so that multiple trails are not necessary. When a subscriber goes on-hook, then the subscriber is at home and awake, unless it is a machine that goes on-hook. Steps for dealing with this are described below. To increase the chances that it is not a machine, such as an answering machine, the predetermined occasion can be when the subscriber goes on-hook after a call/telephone conversation initiated by the subscriber.

In step 332 it is determined if contact was established at all, and if not, then it is determined in a step 335 if enough attempts have been made to the subscriber in question. If there are more attempts available to contact the subscriber in question then the procedure continues with step 331. If an upper limit on the attempts to contact the subscriber has been reached then the subscriber is marked as inaccessible in a step 336 before the procedure continues with step 331. If it was determined in step 332 that contact was established then it is determined in a step 333 if contact has been made to a machine or a human being. A machine can for example be a modem, a fax, or an answering machine. If it is determined that a machine has gone off-hook at the subscriber, then the subscriber in question is marked as inaccessible in step 336 and the procedure continues with step 331. On the other hand, if it is determined that a human being has gone off-hook at the subscriber, then the subscriber in question is marked as having answered and the procedure continues at either step 240 in figure 2, step 441 in figure 4, or step 541 in figure 5. If a subscriber is marked as having answered then preferably no further attempts will be made even if the interaction is not completed.

Fig. 4 shows a flow chart of how the interaction with a subscriber is accomplished according to one method of the invention. The flow chart of figure 4 is one possible expansion of the interaction step 240 in figure 2, specifically it is one possible expansion when the customer requests a survey/poll of some sort. Preferably, the first step 441 comprises supplying the subscriber with an introductory message. The introductory message can provide incentive to the subscriber to complete the interaction by promising a gratuity of some sort if the subscriber completes the interaction. The introductory message might also contain information on how to proceed if additional help is needed or if the subscriber would prefer to have a survey/poll performed in a traditional way by a human calling or a questionnaire sent to the subscriber. If input is required by the subscriber the latter information might be provided as the first questions of step 442 where the customer can provide his answer in step 443. Input from the subscriber might be conducted with voice recognition, voice recording, and/or by the subscriber pressing the buttons (or turning the numbers) on his telephone generating DTMF signalling for decoding, i.e. the subscriber's answers are recorded. In step 444 it is determined if more questions are to be put forward to the subscriber or not. The number of questions might be a fixed number or a dynamically changing number depending on the subscriber input. If there are no more questions to pose to the subscriber, then in step 445 a concluding message is preferably supplied to the subscriber.

Fig. 5 shows a flow chart of how the interaction with a subscriber is accomplished according to another method of the invention. The flow chart of figure 5 is one possible expansion of the interaction step 240 in figure 2, specifically it is one possible expansion when the customer requests an advertisement/announcement service. Preferably

the first step 541 comprises supplying the subscriber with an introductory message. The introductory message can provide incentive to the subscriber to complete the interaction by promising a gratuity of some sort if the subscriber completes the interaction. Then in step 542 a promotional/advertisement/announcement message is provided to the subscriber. After the advertisement in step 542, then in step 545, a concluding message is preferably also supplied to the subscriber.

10 The present invention can be put into apparatus-form either as pure hardware, as pure software or as a combination of hardware and software. If the method according to the invention is realised in the form of software, it can be completely independent or it can be one part of a larger
15 program. The software can suitably be located in a general purpose computer or in a dedicated computer.

As a summary, the invention can basically be described as a device and a method which provide an automatic interaction service for announcements and surveys in a
20 telecommunication network.

The invention is not limited to the embodiments described above but may be varied within the scope of the appended patent claims.

FIG 1

100 customer

101 terminal/computer

102 modem / ISDN

5 103 telephone (DTMF)

104 mobile telephone

110-117 subscribers

120 PSTN

121 interface to external network / INTERNET

10 122 internet

123 interface to external databases

124 external databases

131-133 local exchange LE

141 text to speech

15 142 speech recognition

143 recorder

150 switching node - SSP

160 control node - SCP

170 database node - SDP

20 FIG 2

210 customer request step

220 determining list of subscribers step

230 establish contact with subscriber step

240 interaction with subscriber step

25 250 ? interaction complete ?

260 mark subscriber in list w. interaction complete

270 mark subscriber in list w. interaction incomplete

280 ? more subscribers in list that are not called ?

290 report to customer

FIG 3 - expanded step 230

331 at predetermined occasion try to establish com.
332 ? contact ?
333 ? machine generated output - fax, modem .. ? -
5 334 mark subscriber in list as answered
335 ? more trials to contact subscriber ?
336 mark subscriber in list as inaccessible

FIG 4 - expanded step 240

441 introductory message to subscriber
10 442 question put to subscriber
443 input/recording of subscriber answer
444 ? more questions ?
445 concluding message to subscriber

FIG 5 - expanded step 240

15 541 introductory message to subscriber
542 promotional/advertisement message
545 concluding message to subscriber

CLAIMS

1. A method of providing a telecommunication network service providing an automatic interaction with a predetermined number of subscribers in the telecommunication network over the telecommunication network upon a customer request to the telecommunication network, **characterized in that** the method comprises the following steps:
- in a control node of the telecommunication network determining a list of subscribers with which subscribers the automatic interaction is to be performed;
 - calling the subscribers on the determined list on one or more predetermined occasions by means of the control node directing a switching node of the telecommunication network to establish communication lines with the subscribers on the determined list;
 - interacting with each subscriber upon establishment of a communication line by means of the switching node;
 - determining if the interaction was completed with each subscriber with whom interaction was commenced;
 - reporting to the customer the results of the interactions with the subscribers on the determined list.
2. The method according to claim 1, **characterized in that** the interaction is an advertisement by means of providing a message to each subscriber.

3. The method according to claim 1, **characterized in that** the interaction is a market survey by means of providing one or more questions to each subscriber to which questions responses from each subscriber are recorded.

5 4. The method according to any one of claims 1 to 3, **characterized in that** the predetermined occasion when a subscriber is called is when it is detected that the subscriber goes on hook.

10 5. The method according to any one of claims 1 to 3, **characterized in that** the predetermined occasion when a subscriber is called is when it is detected that the subscriber goes on hook after the subscriber has been off hook initiated by the subscriber.

15 6. The method according to any one of claims 1 to 3, **characterized in that** the predetermined occasion when a subscriber is called is one of several time periods during a day.

20 7. The method according to any one of claims 1 to 6, **characterized in that** if a machine generated output is detected when a communication line has been established, then the interaction is immediately terminated and the subscriber is noted in the list as inaccessible.

25 8. The method according to any one of claims 1 to 7, **characterized in that** the subscribers that are detected to have completed the interaction are noted in the list of subscribers to receive a gratuity.

9. The method according to claim 8, **characterized in that** the gratuity is in the form of free telephone time which is billed to the customer.

10. The method according to any one of claims 1 to 9, **characterized in that** the results are a basis for billing the customer.

5 11. The method according to any one of claims 1 to 10, **characterized in that** the number of detections of completed subscriber interaction is a basis for billing the customer.

10 12. A method of providing a telecommunication network service providing an automatic interaction with a number of predetermined subscribers in the telecommunication network over the telecommunication network upon a customer request to the telecommunication network, **characterized in that** the method comprises the following steps:

- 15 - calling the predetermined subscribers on one or more predetermined occasions by means of a control node in the telecommunication network directing a switching node of the telecommunication network to establish communication with one or more of the predetermined subscribers;
- 20 - upon establishment of communication by means of the switching node to one or more predetermined subscribers, interacting with the predetermined subscribers with whom communication has been established;
- 25 - determining with which predetermined subscribers, with whom interaction was commenced, interaction was completed, thereby creating, together with the interactions, results of the interactions;
- reporting to the customer the results of the interactions with the predetermined subscribers.

30 13. A method of providing a telecommunication network service providing an automatic interaction with a number of predetermined subscribers in the telecommunication network over the telecommunication network upon a customer request

to the telecommunication network, characterized in that the method comprises the following steps:

- 5 - calling the predetermined subscribers on one or more predetermined occasions by means of a control node in the telecommunication network directing a switching node of the telecommunication network to establish communication with one or more of the predetermined subscribers;
- 10 - upon establishment of communication by means of the switching node to one or more predetermined subscribers, interacting with the predetermined subscribers with whom communication has been established;
- 15 - creating results of the interactions with the predetermined subscribers;
- reporting to the customer the results of the interactions with the predetermined subscribers.

14. A telecommunication network (120) for providing an automatic interaction with a predetermined number of subscribers (110-117) in the telecommunication network over the telecommunication network upon a customer (100) request to the telecommunication network, characterized in that the telecommunication network comprises:

- 25 - a control node (160) by means of which a list of subscribers is determined, with which subscribers the automatic interaction is to be performed;
- a switching node (150) by means of which the subscribers on the determined list are called at one or more predetermined occasions under control of the control node directing the switching node to establish communication lines with the subscribers on the determined list;
- 30 - interacting means (150, 160, 141, 142, 143) which interacts with each subscriber with whom a

communication line has been established by means of the switching node;

- determining means (150, 160) for determining if the interaction was completed with each subscriber with whom interaction was commenced;
- means (150, 160) for reporting to the customer the results of the interactions with the subscribers on the determined list.

15. The telecommunication network according to claim 14, **characterized in that** the interaction is an advertisement and that the telecommunication network comprises means (150, 160, 141, 142, 143) for providing a message.

16. The telecommunication network according to claim 14, **characterized in that** the interaction is a market survey and that the telecommunication network comprises means (150, 160, 141, 142, 143) for providing one or more questions and means (150, 160, 142, 143) for recording the responses to the questions.

17. The telecommunication network according to any one of claims 14 to 16, **characterized in that** the telecommunication network comprises means (150, 160) for detecting when a subscriber goes on-hook and that the predetermined occasion when a subscriber is called is when the subscriber goes on hook.

18. The telecommunication network according to any one of claims 14 to 16, **characterized in that** the predetermined occasion when a subscriber is called is one of several time periods during a day.

19. The telecommunication network according to any one of claims 14 to 18, **characterized in that** the telecommunication network comprises means (150, 160) to

5 detect machine generated output and that if a machine generated output is detected when a communication line has been established, then the interaction is immediately terminated and the subscriber in question is noted in the list as inaccessible.

20. The telecommunication network according to any one of claims 14 to 19, **characterized in that** the subscribers that are detected to have completed the interaction are noted in the list of subscribers for a gratuity.

10 21. The telecommunication network according to claim 20, **characterized in that** the gratuity is in the form of free telephone time within the telecommunication network which is billed to the customer.

15 22. The telecommunication network according to any one of claims 14 to 21, **characterized in that** the results are a basis for billing the customer.

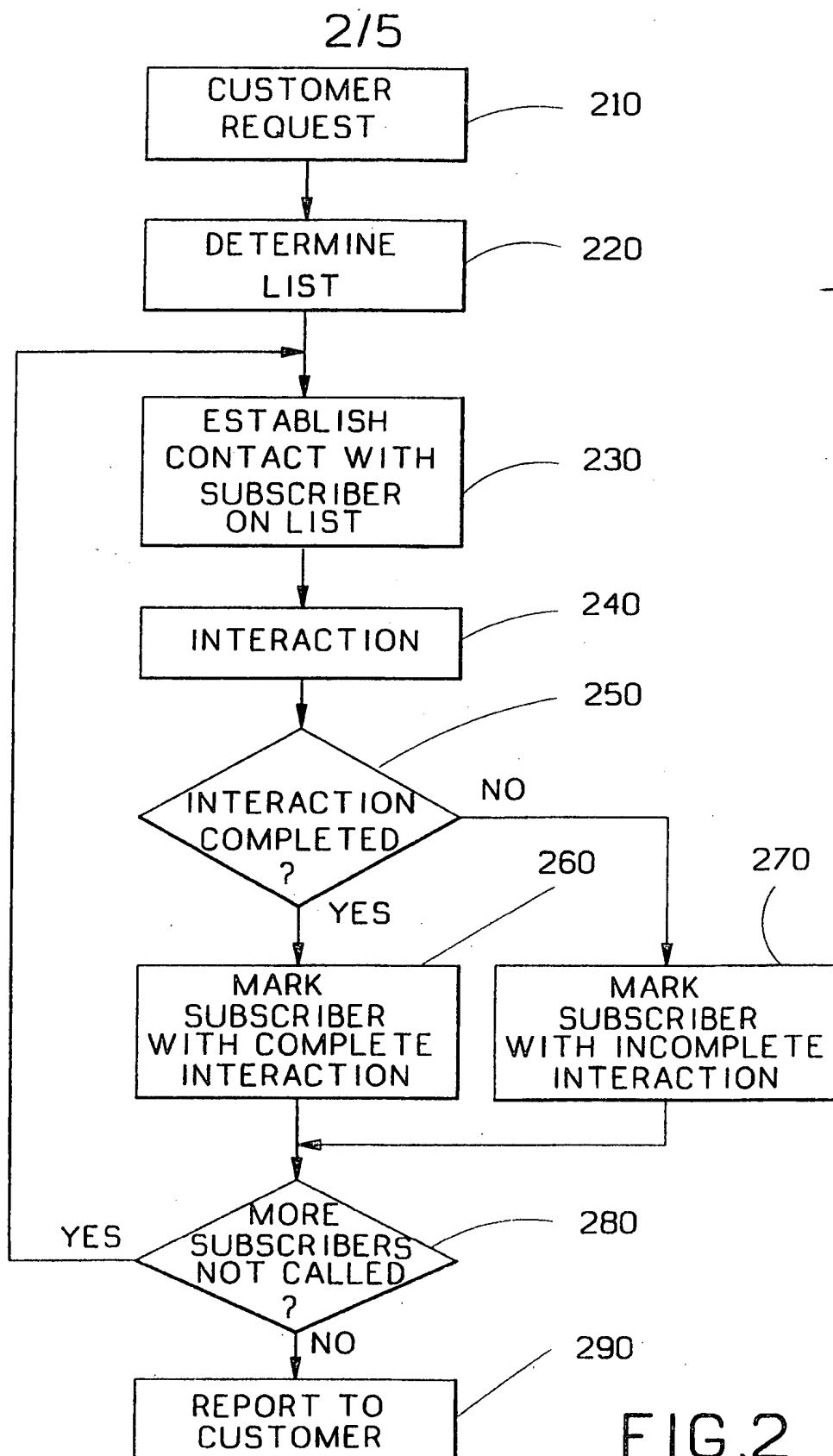
20 23. The telecommunication network according to any one of claims 14 to 22, **characterized in that** the number of detections of completed subscriber interaction is a basis for billing the customer.

25 24. A device (150, 160) for providing in a telecommunication network (120) an automatic interaction with a number of predetermined subscribers (110-117) in the telecommunication network over the telecommunication network upon a customer (100) request to the device in the telecommunication network, **characterized in that** the device comprises:

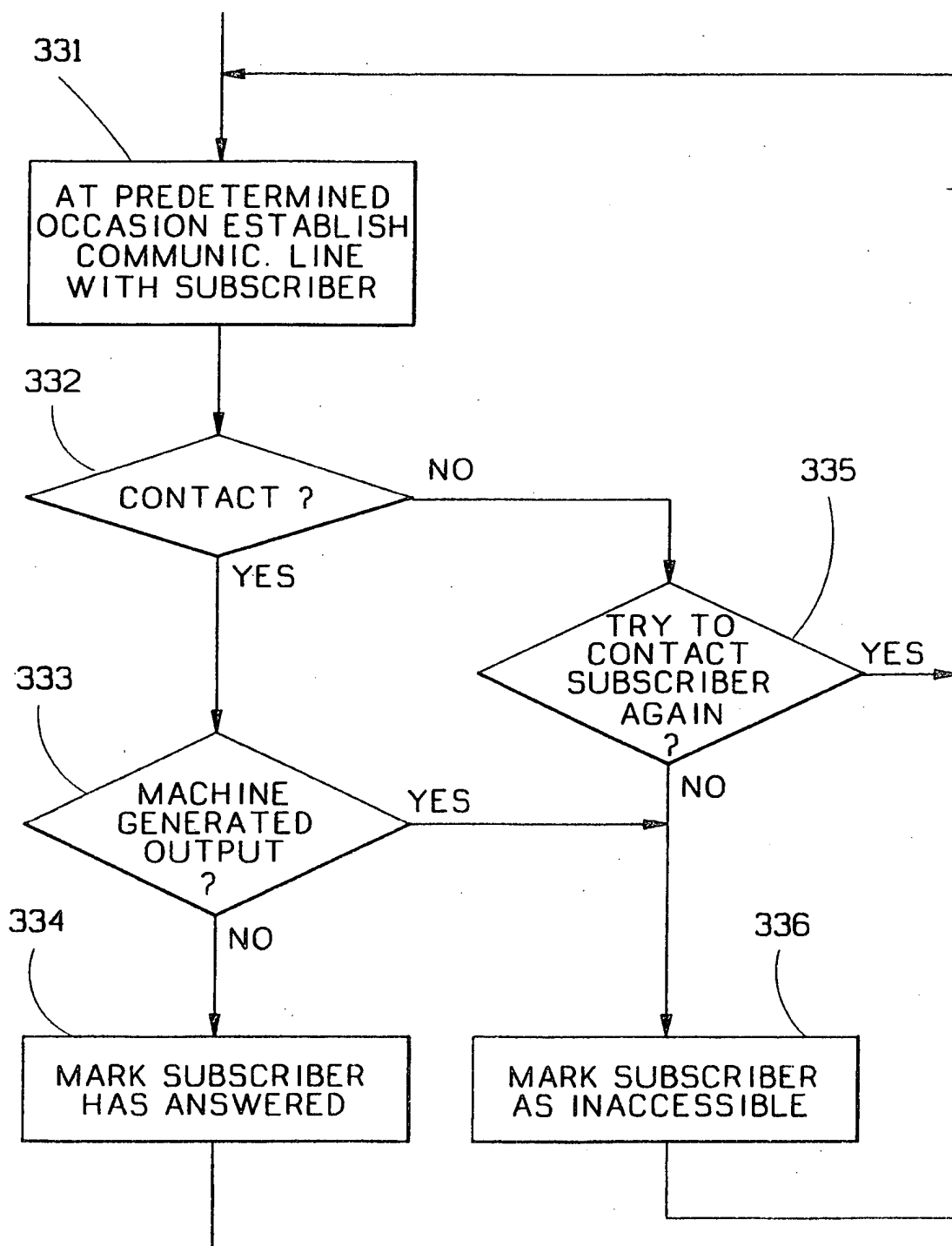
30 - calling means (150, 160) by means of which the predetermined subscribers are called on one or more predetermined occasions to establish communication

between the device and one or more of the predetermined subscribers;

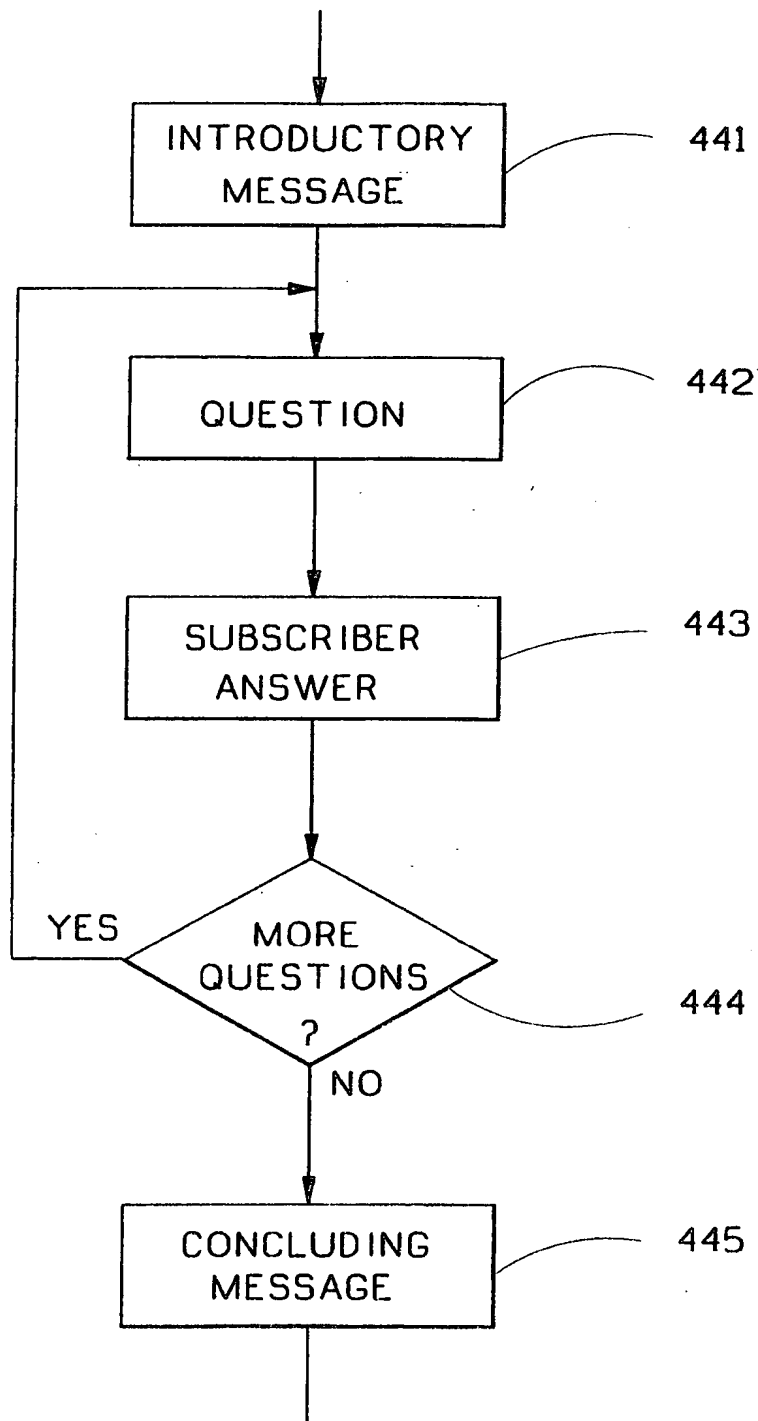
- 5 - interacting means (150, 160, 141, 142, 143) which interacts with the one or more predetermined subscribers with whom communication has been established;
- determining means (150, 160) for determining which of the interactions which were commenced were completed, thereby together with the interactions creating
- 10 results of the interactions;
- means (150, 160) for reporting to the customer the results of the interactions with the predetermined subscribers.

FIG.2

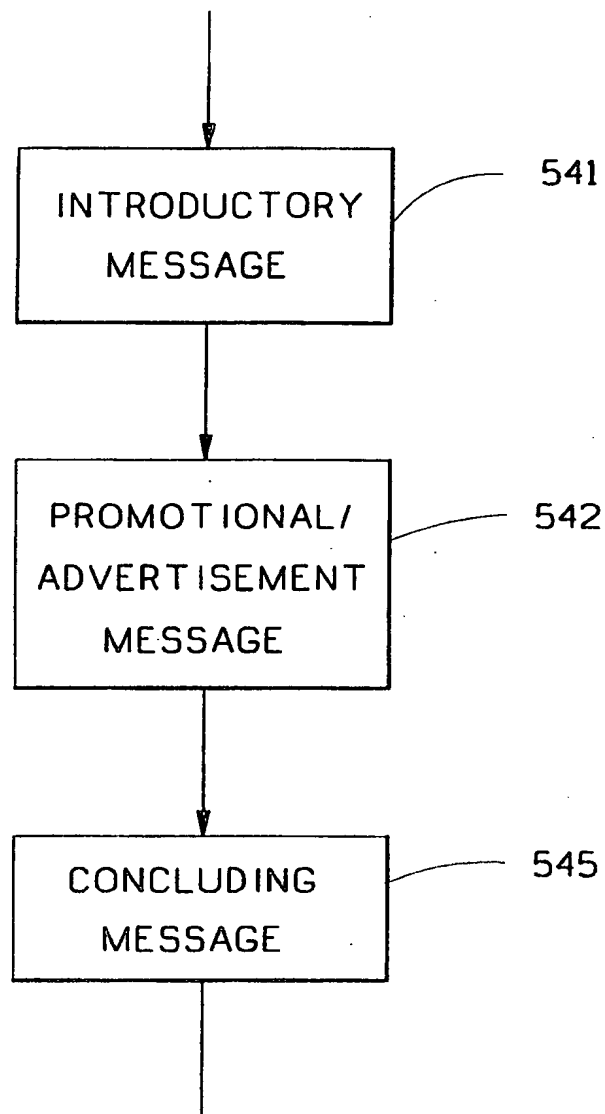
3/5

FIG.3

4/5

FIG.4

5/5

FIG.5

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 98/00856

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: H04M 3/46, H04M 15/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: H04M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 8805239 A1 (M.A. KEMPNER, INC.), 14 July 1988 (14.07.88), page 5, line 33 - page 6, line 7; page 15, line 23 - line 27 --	1-7,12-19,24
Y	US 5333186 A (SHIV K. GUPTA), 26 July 1994 (26.07.94), column 1, line 25 - line 47; column 5, line 13 - line 62 --	1-2,8-15, 20-24
Y	US 4438296 A (FRED J. SMITH), 20 March 1984 (20.03.84), column 3, line 31 - line 41; column 14, line 8 - line 15 --	1,4,5,12-14, 17,24

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

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Date of the actual completion of the international search

10 Sept 1998

Date of mailing of the international search report

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 98/00856

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4320256 A (MICHAEL J. FREEMAN), 16 March 1982 (16.03.82), column 2, line 5 - column 3, line 28 -----	1,3,12-14, 16,24

INTERNATIONAL SEARCH REPORT

Information on patent family members

27/07/98

International application No.

PCT/SE 98/00856

Patent document cited in search report			Publication date	Patent family member(s)		Publication date
WO	8805239	A1	14/07/88	AU	1107588 A	27/07/88
				US	4922520 A	01/05/90
				ZA	8709731 A	24/06/88

US	5333186	A	26/07/94	NONE		

US	4438296	A	20/03/84	CA	1169984 A	26/06/84
				CA	1193001 C	03/09/85

US	4320256	A	16/03/82	US	4420656 A	13/12/83
